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INFORMATION LEAFLET
FOREIGN WOODS

Forest Products Laboratory,[1] Forest Service
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ROBLE BLANCO, AMAPA, MAYFLOWER

Tabebuia pentaphylla (L.) Hemsl.
Family: Bignoniaceae

By

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Distribution and Habitat

The genus Tabebuia is widely distributed throughout tropical America. It is divided into three main groups of trees: Roble (a Spanish name for oak), "White Cedar," and Lapacho. Each group is represented by species with distinct wood characteristics. The Roble group, discussed in this report, includes several species, but the best known is Tabebuia pentaphylla. The wood bears a superficial resemblance to oak, but it lacks the large rays. This species is quite common in Mexico, Central America, Ecuador, Colombia, Venezuela, and the West Indies. It grows in various habitats, from wet lowlands to dry mountainsides (4, 13, 15, 20, 21).[2]

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[1] Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

[2] Underlined numbers in parentheses refer to the list of numbered references at the end of the report.

Other Common Names

Roble blanco is also known by the following names (4, 9, 21, 23, 26):

Amapa rosa	- Mexico	Maqueliz	- Guatemala, Honduras
Amapola	- Mexico	Maquil	- Mexico
Apamate	- Venezuela	Matilisquate	- Guatemala, Honduras
Guayacán	- Costa Rica	Orumo	- Venezuela
Hokab	- Mexico	Palo de rosa	- Mexico
Macuelizo	- Honduras	Palo yugo	- Mexico
Macuil	- Mexico	Pink poui	- Trinidad
Macuiles	- Salvador	Poirier	- Martinique
Macuilixuatl	- Mexico	Roble de sabana	- Costa Rica
Maculigua	- Salvador	Roble del río	- Colombia
Maculiz	- Mexico	Roble morado	- Colombia
Mano de león	- Guatemala, Honduras	Rosa morado	- Mexico

The Tree

Size

Roble blanco may reach a height of 95 feet and a diameter of 2 feet or more. Buttresses often extend from 7 to 10 feet up the trunk. Clear boles 20 to 35 and occasionally to 50 feet above the buttresses may occur (3, 4, 15, 17, 21, 22, 23).

Bark

The grayish bark is rough and scaly near the base of the tree, but it is smooth higher up (11, 19, 21).

Leaves

The leaves have five leaflets and are in pairs along the stem and clustered near the ends of the branches. The tree is deciduous (19, 23).

Flowers and Fruit

The flowers are showy, ranging in color from white to deep pink, and the tree is valued for ornamental planting. The fruits are long, slender pods with winged seeds (8, 11, 12, 15, 23, 24, 30).

The Wood

Color

The heartwood is light brown with either a grayish or somewhat golden hue. Fine lines of deep brown form a conspicuous pattern, especially on the tangential surface. The sapwood is yellowish to white when freshly cut, becoming light brown after drying and exposure, and not very distinct from the heartwood (4, 6, 9, 10, 12, 18, 21, 27).

Texture, Grain, Figure

Roble blanco has a medium to rather coarse texture. The grain may be interlocked, showing a ribbon-stripe figure on the radial or quartersawn surface of the wood, or it may be straight. The tangential or flatsawn surface often shows a distinctive figure of fine brown lines, caused by the abundant parenchyma that contains dark, gummy material (4, 9, 10, 21, 25, 31).

Luster

The luster is low to medium (21).

Odor and Taste

The wood is odorless and tasteless when dry (4, 11).

Weight

Roble blanco is rated moderately heavy to heavy (4, 9, 21), with an average specific gravity of 0.52 (0.44 to 0.63) based on weight when ovendry and volume when green. It averages about 55 pounds per cubic foot when green and 38 pounds when air-dry (4).

Mechanical Properties

Values obtained for the mechanical properties of roble blanco in the green and air-dry condition are given in table 1. Values for white ash (Fraxinus americana) and white oak (Quercus alba) are included for comparison (32).

Seasoning and Shrinkage

Roble blanco is rated easy to season. Slight checking and warping may occur with rapid drying, but these defects can be minimized by slower drying (32). Kiln schedule 4 of the British Forest Products Research Laboratory has been

recommended (1). The U. S. Forest Products Laboratory schedule that appears most appropriate for 4/4 stock is T4-D2 (28). Shrinkage data for roble blanco are given in table 2.

When tested at Yale University, roble blanco showed only fair weathering characteristics. Exposed, unpainted wood remained free from warp but developed surface roughness and considerable checking. The heartwood readily absorbs moisture (32).

Durability

The heartwood of roble blanco is variable in its resistance to decay. It is given an average rating of "moderately durable" in resistance to a white-rot fungus (Polyporus versicolor) and "very durable" in its resistance to a brown-rot fungus (Poria monticola) (32). It is rated low in resistance to insect attack by Dickinson, et al (4), but a report by the Forest Department of British Honduras indicates that resistance to fungal and insect attack is moderately high (11).

Working Characteristics

Roble blanco is very easy to work with both hand and machine tools and takes a smooth finish. It holds its place well when manufactured. It has good nailholding characteristics, but it is advisable to prebore the nail holes in thick stock. The wood finishes attractively in natural color and takes stains with good results (4, 5, 21, 27).

Uses

The wood is used locally for ox yokes, house construction, boat building, piling, carpentry, interior finish and flooring, wagons, and packing boxes (2, 4, 21, 24, 29, 33). The future demand for the wood in this country will probably be for uses for which it is now best known, namely furniture, millwork, flooring, and general construction (4).

Structure

Growth rings may be distinct to indistinct. They are delimited by an increase in fiber density and fine lines of terminal parenchyma. Vessels are distinct without magnification and appear on quartersawn or flatsawn surfaces as coarse brown grooves. Parenchyma is terminal, wing-like about the pores, and confluent. Ripple marks are distinct and regular (7, 9, 11, 16).

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Table 1.--Mechanical properties of roble blanco (*Tabebuia pentaphylla*), white oak (*Quercus alba*), and white ash (*Fraxinus americana*)[1]

Property	Species[2]		
	Roble blanco (*Tabebuia pentaphylla*)	White oak (*Quercus alba*)	White ash (*Fraxinus americana*)
Moisture content			
Green.....percent	68.2	68	42
Air-dry[3].....percent	13.5	12	12
Specific gravity			
Based on green volume and ovendry weight..	0.52	0.60	0.55
Based on volume and weight when ovendry...	0.57	0.71	0.64
Static bending			
Fiber stress at proportional limit			
Green.....p.s.i.	6,600	4,700	5,100
Air-dry[3].....p.s.i.	9,480	8,200	8,900
Modulus of rupture			
Green.....p.s.i.	10,770	8,300	9,600
Air-dry[3].....p.s.i.	13,780	15,200	15,400
Modulus of elasticity			
Green.....1,000 p.s.i.	1,450	1,250	1,460
Air-dry[3].....1,000 p.s.i.	1,600	1,780	1,770
Work to proportional limit			
Green.....in.-lb. per cu. in.	1.66	1.08	1.04
Air-dry[3].....in.-lb. per cu. in.	3.18	2.27	2.60
Work to maximum load			
Green.....in.-lb. per cu. in.	11.7	11.6	16.6
Air-dry[3].....in.-lb. per cu. in.	12.5	14.8	17.6
Compression parallel to grain			
Fiber stress at proportional limit			
Green.....p.s.i.	4,040	3,090	3,190
Air-dry[3].....p.s.i.	5,890	4,760	5,790
Maximum crushing strength			
Green.....p.s.i.	4,910	3,560	3,990
Air-dry[3].....p.s.i.	7,340	7,440	7,410
Modulus of elasticity			
Green.....1,000 p.s.i.	1,510	.....	.....
Air-dry[3].....1,000 p.s.i.	1,740	.....	.....
Hardness[4]			
Green - end.....lb.	1,030	1,120	1,010
Green - side.....lb.	910	1,060	960
Air-dry[3] - end.....lb.	1,310	1,520	1,720
Air-dry[3] - side.....lb.	*960	1,360	1,320

Table 1.--Mechanical properties of roble blanco (*Tabebuia pentaphylla*), white oak (*Quercus alba*), and white ash (*Fraxinus americana*)[1] (continued)

Property	Species[2]		
	Roble blanco (*Tabebuia pentaphylla*)	White oak (*Quercus alba*)	White ash (*Fraxinus americana*)
Compression perpendicular to the grain			
Stress at proportional limit			
Green.....p.s.i.	790	830	810
Air-dry[3].....p.s.i.	940	1,320	1,410
Tension perpendicular to grain			
Green.....p.s.i.	790	770	590
Air-dry[3].....p.s.i.	*560	800	940
Shear			
Green.....p.s.i.	1,250	1,250	1,380
Air-dry[3].....p.s.i.	1,450	2,000	1,950
Cleavage			
Green.....lb. per in. of width	380	420	330
Air-dry[3].....lb. per in. of width	*270	450	480
Toughness[5].....in.-lb. per specimen	147.0	[6]144.9	.....

[1]This table shows results of tests on roble blanco made by the Yale School of Forestry in cooperation with the Office of Naval Research and the Bureau of Ships, U. S. Navy Dept. Average strength values for all logs are presented (32). The results of tests on white oak and white ash, cited in the same Yale report, were taken from U. S. Dept. Agriculture Tech. Bull. 479 (14). Strength values for roble blanco from Venezuela are not included in this table, but have been determined on limited material at a different moisture content by Kynoch and Norton (10).

[2]Source and number of logs: Roble blanco, British Honduras, 3 logs, Honduras, 3 logs, and Panama, 3 logs; white oak, United States, 20 logs; white ash, United States, 23 logs.

[3]Air-dry values adjusted to 12 percent moisture content except where designated (*), in which case the actual moisture content at time of testing (see Moisture Content in table) applies.

[4]The load in pounds required to embed a 0.444-inch steel ball to half its diameter.

[5]Toughness values are the average of tests of green and air-dry specimens 5/8 by 5/8 by 10 inches loaded on the tangential face over an 8-inch span.

[6]Value obtained for plank material received from the New York Naval Shipyard.

Table 2.--Shrinkage values for roble blanco (Tabebuia pentaphylla)[1]

Species and source	Shrinkage[2]			
	Radial	Tangential	Longitudinal	Volumetric
	Percent	Percent	Percent	Percent
Roble blanco (Tabebuia pentaphylla)				
Panama	3.6	6.2	0.09	10.4
British Honduras	3.6	6.1	.18	8.7
Honduras	3.7	5.9	.15	9.5
Average (Panama, Brit. Honduras, Honduras)	3.6	6.1	.14	9.5
Venezuela	2.6	5.9		9.3

[1] This table shows results of tests on roble blanco made by the Yale School of Forestry in cooperation with the Office of Naval Research and the Bureau of Ships, U. S. Navy Department (4, 32). The results of tests on material from Venezuela were taken from the report of Kynoch and Norton (10).

[2] Shrinkage values represent shrinkage from the green to the ovendry condition expressed as a percentage of the green dimension.

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